REMARKS

In paragraph 2 of the Office Action claims 1-50 a stand provisionally rejected under the doctrine of obviousness type double patenting as being unpatentable over claims 1-56 of copending Application number 10/636,470. It is respectfully requested that this rejection be reconsidered and withdrawn in view of the Terminal Disclaimer over Application number 10/636,470 that is filed with this amendment.

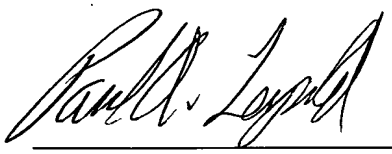
In paragraph 4 of the Office Action claims 1-58 stand rejected under 35 USC 103 as being a patentable over Chen (817) in view of Henry (536). Examiner states that Chen teaches a fuser member where an elastomer cushion layer and a surface layer contain filled polydimethylsiloxanes. The Examiner points out that Chen does not teach the specific hardness of the elastomer layers. Henry is stated to teach a similar fuser member containing silicone elastomer where a specific hardness is disclosed. The Examiner states it would have been obvious to one of ordinary skill in the art that the layers of Chen could be the desired hardness because of the direct suggestion of Henry and the known performance of diffuser members of the prior art would dictate a predictable hardness for similar performance. This rejection is respectfully traversed.

Chen et al discloses a fuser rolled having to elastomer layers. The topcoat is shown as having a high content of the filler and therefore would be of a high Shore hardness. Further, Chen does not disclose or suggest the utilization of the specified layer structure or the relationship of hardness between the two layers as now claimed. The Examiner's attention is drawn to the trade literature for Stycast 5952 and Stycast 4952 where a hardness greater than that now claimed for the surface layer is indicated. These Stycast materials are utilized in the examples of Chen. Henry et al. while disclosing a pressure roller having a surface layer of a shore hardness overlapping the specified claimed range does not disclose the multilayer structure having the relationship of shore hardness and filler as indicated in the instant claims. Further, there is no disclosure or suggestion of the loading of silica filler in the amount of 10 percent or less to achieve the hardness specified. There is no teaching of the layer combinations and properties, as specified in instant claims, in any

combination of the cited art. These claimed selections are not disclosed or suggested by the references alone or in any combination. Therefore it is respectfully requested that this rejection be reconsidered and withdrawn.

Therefore, it is respectfully requested that the rejections under obviousness double patenting and 35 USC 103 be reconsidered and withdrawn and that an early Notice of Allowance be issued in this application.

Respectfully submitted,



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STYCAST® 5952 A/B

Thermally Conductive Silicone Encapsulant

Key Feature:	Benefit:
◦ Good thermal conductivity	◦ Dissipation of heat from embedded components
◦ Easy 1 to 1 mix ratio	◦ Ease of use
◦ Reversion resistant and non-corrosive	◦ High reliability of encapsulated assemblies

Product Description:

STYCAST 5952 A/B is a filled, addition cured, silicone encapsulant. It features good thermal conductivity, excellent electrical insulation properties, a convenient mix ratio and can be cured over a wide range of temperatures. STYCAST 5952 A/B can be cured in thick sections and is non-corrosive and reversion resistant.

Applications:

STYCAST 5952 A/B was designed for encapsulating heat generating electronic devices such as bridge rectifiers, power supplies, thermistors, transformers, thermal probes and sensors. Other applications include pour-in-place thermal pads and heat sinks.

Instructions For Use:

Thoroughly read the information concerning health and safety contained in this bulletin before using. Observe all precautionary statements that appear on the product label and/or contained in individual Material Safety Data Sheets (MSDS).

To ensure the long term performance of the potted or encapsulated electrical / electronic assembly, complete cleaning of components and substrates should be performed to remove contamination such as dust, moisture, salt, and oils which can cause electrical failure, poor adhesion or corrosion in an embedded part.

The cure of this silicone product may be inhibited through contact with certain contaminants. Avoid contact with butyl and chlorinated rubbers, amines, sulfur or sulfur containing materials, tin containing compounds, or heavy metal salts. Substrates in question should be evaluated for compatibility before application of this product. In addition, molds, mixing equipment, ovens, and other apparatus that will be used in the preparation and curing of this product should be free of inhibiting contaminants.

Some filler settling is common during shipping and storage. For this reason, it is recommended that the contents of the shipping container be thoroughly mixed prior to use. Power mixing is preferred to ensure a homogeneous product.

Accurately weigh resin and hardener into a clean container in the recommended ratio. Weighing apparatus having an accuracy in proportion to the amounts being weighed should be used.

Blend components by hand, using a kneading motion, for 2-3 minutes. Scrape the bottom and sides of the mixing container frequently to produce a uniform mixture. If possible, power mix for an additional 2-3 minutes. Avoid high mixing speeds which could entrap excessive amounts of air or cause overheating of the mixture resulting in reduced working life.

To ensure a void-free embedment, vacuum degiring should be used to remove any entrapped air introduced during the mixing operation. Vacuum deair mixture at 1-5 mm mercury. The foam will rise several times the liquid height and then subside. Continue vacuum degiring until most of the bubbling has ceased. This usually requires 3-10 minutes.

In general, silicone materials exhibit outstanding release properties and will not adhere to most substrates. If adhesion is required, apply a thin, uniform coating of PRIMER S 11 to the desired clean, dry substrates. Allow the PRIMER S 11 to dry for 30-60 minutes at room temperature before applying this silicone material.

Pour mixture into cavity or mold. Further vacuum degiring in the mold may be required for critical applications.

Properties of Material As Supplied:

Property	Test Method	Unit	Value - Part A	Value - Part B
Chemical Type			Silicone	Silicone
Appearance	Visual		Red liquid	White liquid
Density	ASTM-D-792	g/cm³	2.05	2.05
Brookfield Viscosity	ASTM-D-2393	Pa.s cP	65 65,000	18 18,000

Properties of Material As Mixed:

Property	Test Method	Unit	Value
Mix Ratio - Amount of Part B per 100 parts of Part A		By Weight or Volume	100
Working Life (100 g @ 25°C)	ERF 13-70	minutes	100
Density	ASTM-D-792	g/cm³	2.05
Brookfield Viscosity	ASTM-D-2393	Pa.s cP	40 40,000

Cure Schedule:

Cure at any one of the recommended cure schedules. This product may be cured in large castings with no adverse heat or exotherm effects. There is essentially no limit on casting size due to shrinkage or exotherm.

Temperature °C	Cure Time Time
25	2 - 7 days
65	1 - 4 hours
150	20 minutes

Properties of Material After Application:

Property	Test Method	Unit	Value
Hardness	ASTM-D-2240	Shore A	75
Tensile Strength	ASTM-D-412	mPa	3.4
		psi	500
Tear Strength	ASTM-D-624	N/m	3,500
		pli	20
Elongation	ASTM-D-412	%	50
Linear Shrinkage	ASTM-D-2566	cm/cm	0.002
Coefficient of Thermal Expansion	ASTM-D-3386	10^{-6}/°C	200
Glass Transition Temperature	ASTM-D-3418	°C	-120
Thermal Conductivity	ASTM-D-2214	W/m.K	0.85
		Btu-in/hr-ft^2-°F	6.0
Temperature Range of Use		°C	-65 to +260
Dielectric Strength	ASTM-D-149	kV/mm	17.7
		V/mil	450
Dielectric Constant @ 1 mHz	ASTM-D-150	-	5.0
Dissipation Factor @ 1 mHz	ASTM-D-150	-	0.01
Volume Resistivity @ 25°C	ASTM-D-257	Ohm-cm	>10^{14}

Storage and Handling:

The shelf life of STYCAST® 5952 Parts A and B is 6 months at 25°C. For best results, store in original, tightly covered containers. Storage in cool, clean and dry areas is recommended. Usable shelf life may vary depending on method of application and storage conditions.

Health and Safety:

The STYCAST 5952 Parts A and B, like most industrial compounds, possess the ability to cause skin and eye irritation upon contact. Handling these products at elevated temperatures may also generate vapors irritating to the respiratory system.

Good industrial hygiene and safety practices should be followed when handling these products. Proper eye protection and appropriate chemical resistant clothing should be worn to minimize direct contact. Consult the Material Safety Data Sheet (MSDS) for detailed recommendations on the use of engineering controls and personal protective equipment.

This information is only a brief summary of the available safety and health data. Thoroughly review the MSDS for more complete information before using this product.

Attention Specification Writers:

The technical information contained herein is consistent with the properties of this material but should not be used in the preparation of specifications as it is intended for reference only.

For assistance in preparing specifications, please contact your local Emerson & Cuming Specialty Polymers office for details. Please contact Emerson & Cuming Quality Assurance for test method details.

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Printed in U.S.A.

STYCAST® 4952
Thermally Conductive, RTV Silicone Encapsulant

Key Feature:	Benefit:
° High thermal conductivity	° Dissipation of heat from embedded components
° High temperature resistance	° Casting can survive severe environmental conditions

Product Description:

STYCAST 4952 is a RTV condensation cure, thermally conductive, silicone rubber potting compound. It yields a flexible, thermally conductive material having excellent electrical properties and high temperature resistance. STYCAST 4952 is readily pourable and is room temperature curable.

Applications:

STYCAST 4952 is designed for potting and encapsulation of components that require the dissipation of heat and the high temperature properties and low stress of a silicone compound.

Instructions For Use:

Thoroughly read the information concerning health and safety contained in this bulletin before using. Observe all precautionary statements that appear on the product label and/or contained in individual Material Safety Data Sheets (MSDS).

To ensure the long term performance of the potted or encapsulated electrical / electronic assembly, complete cleaning of components and substrates should be performed to remove contamination such as dust, moisture, salt, and oils which can cause electrical failure, poor adhesion or corrosion in an embedded part.

This RTV silicone product is based on condensation cure chemistry and will cure in contact with most materials without cure inhibition. This product is not recommended for use in closed molds or sealed molds which could prevent its exposure to moisture or the escape of reaction by-products required to complete the cure. In addition, catalysts used to cure this product may cause corrosion of copper and other sensitive metals.

Some filler settling is common during shipping and storage. For this reason, it is recommended that the contents of the shipping container be thoroughly mixed prior to use. Power mixing is preferred to ensure a homogeneous product.

Accurately weigh the liquid RTV silicone and catalyst into a clean container in the recommended ratio. To facilitate the addition of catalyst, the use of a medicine dropper which has been previously calibrated to determine the number of drops per gram is recommended. Working life and cure time are shortened as the amount of catalyst is increased. Low catalyst concentrations are recommended for applications requiring thick sections or use at temperatures in excess of 125°C.

Blend components by hand, using a kneading motion, for 2-3 minutes. Scrape the bottom and sides of the mixing container frequently to produce a uniform mixture. If possible, power mix for an additional 2-3 minutes. Avoid high mixing speeds which could entrap excessive amounts of air or cause overheating of the mixture resulting in reduced working life.

To ensure a void-free embedment, vacuum deairing should be used to remove any entrapped air introduced during the mixing operation. Vacuum deair mixture at 1-5 mm mercury. The foam will rise several times the liquid height and then subside. Continue vacuum deairing until most of the bubbling has ceased. This usually requires 3-10 minutes.

In general, silicone materials exhibit outstanding release properties and will not adhere to most substrates. If adhesion is required, apply a thin, uniform coating of PRIMER S 11 to the desired clean, dry substrates. Allow the PRIMER S 11 to dry for 30-60 minutes at room temperature before applying this silicone material.

Pour mixture into cavity or mold. Further vacuum deairing in the mold may be required for critical applications.

Properties of Material As Supplied:

Property	Test Method	Unit	Value
Chemical Type			Silicone
Appearance	Visual		Red liquid
Density	ASTM-D-792	g/cm³	2.20
Brookfield Viscosity	ASTM-D-2393 10 rpm # 7	Pa.s cP	35 35,000

Choice of Curing Agents		
Curing agent	Catalyst 25	Catalyst 50
Description	Condensation cure catalyst, yields slightly better low temperature performance and is less corrosive. Also longer pot life and less tendency to revert.	Standard condensation cure catalyst, yields slightly better adhesion and high temperature performance. Also slightly faster curing.
Type of cure	Room	Room
Viscosity Pa.s cP	0.065 65	0.065 65

Properties of Material As Mixed:

Property	Test Method	Unit	Value	
			Catalyst 25	Catalyst 50
Mix Ratio - Amount of Catalyst per 100 parts of STYCAST® 4952		By Weight	0.1 - 0.4	0.1 - 0.4
Working Life (100 g @ 25°C)	ERF 13-70		110	60
Density	ASTM-D-792	g/cm^3	2.20	2.20
Brookfield Viscosity	ASTM-D-2393	Pa.s cP	35 35,000	35 35,000

Cure Schedule:

Cure at any one of the recommended cure schedules. Where use at temperatures above 125°C is anticipated, a post cure schedule of 1-2 hours at 25-30°C increments up to the highest expected use temperature is recommended to properly condition the silicone rubber.

Temperature	Cure Time (hours)	
°C	Catalyst 25	Catalyst 50
25	16-24	16-24
65	4-6	2-4

Properties of Material After Application:

Property	Test Method	Unit	Value	
			Catalyst 25	Catalyst 50
Hardness	ASTM-D-2240	Shore A	70	70
Tensile Strength	ASTM-D-412	mPa psi	4.5 650	4.5 650
Elongation	ASTM-D-412	%	70	70
Tear Strength	ASTM D-624	N/m pli	4,400 25	4,400 25
Coefficient of Thermal Expansion	ASTM-D-3386	10^{-6}/°C	162	162
Thermal Conductivity	ASTM-D-2214	W/m.K Btu-in/hr-ft^2-°F	1.0 7.0	1.0 7.0
Temperature Range of Use		°C	-65 to +260	-65 to +260
Dielectric Strength	ASTM-D-149	kV/mm V/mil	21.7 550	21.7 550
Dielectric Constant @ 1 mHz	ASTM-D-150	-	5.2	5.2
Dissipation Factor @ 1 mHz	ASTM-D-150	-	0.01	0.01
Volume Resistivity @ 25°C	ASTM-D-257	Ohm-cm	>10^{14}	>10^{14}

Storage and Handling:

The shelf life of STYCAST 4952 is 6 months at 25°C. For best results, store in original, tightly covered containers. Storage in cool, clean and dry areas is recommended. Usable shelf life may vary depending on method of application and storage conditions.

Health and Safety:

The STYCAST 4952, like most industrial compounds, possesses the ability to cause skin and eye irritation upon contact. Handling this product at elevated temperatures may also generate vapors irritating to the respiratory system.

Good industrial hygiene and safety practices should be followed when handling this product. Proper eye protection and appropriate chemical resistant clothing should be worn to minimize direct contact. Consult the Material Safety Data Sheet (MSDS) for detailed recommendations on the use of engineering controls and personal protective equipment.

This information is only a brief summary of the available safety and health data. Thoroughly review the MSDS for more complete information before using this product.

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